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AUTHOR Mallis, Jackie; Gilman, Sharlene
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ABSTRACT

The document presents Module 5, enrichment activities for the gifted/talented, of the Star Power modules developed for school personnel who have an interest in or a need to explore the area of gifted and talented education. It is explained in an introductory section that the modules can be used for independent study, for small group interaction, or for a large group inservice program. The goals of this module are to understand the meaning of "enrichment" as applied to classroom activities for the gifted/talented and to discover materials useful and appropriate for this group of students. Sections include the following: enabling objectives (such as discriminate between activities which are merely busywork and those which provide meaningful learning); rationale to establish a frame of reference; preassessment tests and evaluation; instructions for scoring the preassessment instruments; activities (which cover such topics as planning an invention workshop and encouraging students to create a hydroponic garden); and postassessment procedures. (SBH)

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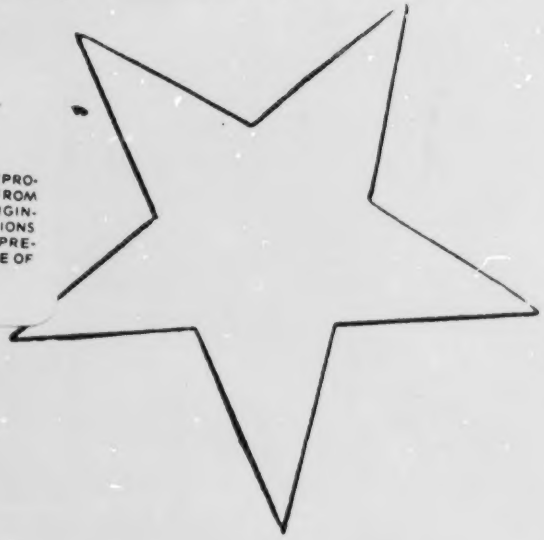

star power

providing for the gifted & talented

MODULE 5

ENRICHMENT ACTIVITIES FOR THE GIFTED/TALENTED

by

Jackie Mallis and Sharlene Gilman

EDUCATION SERVICE CENTER, REGION XIII

7703 North Lamar

Austin, Texas 78752

1978

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Executive Director	Dr. Joe Parks
Director, Instructional Services Division	Donroy Hafner
Coordinator, Curriculum and Instruction	Laura Williams
Project Manager	Jackie Mallis
Cover Designer	Martha Bell

EDUCATION SERVICE CENTER, REGION XIII

Austin, Texas

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Mary Ralph, Curriculum Director, Schertz-Cibolo-Universal City Independent School District

* for participation in pilot testing and extended field testing of modules

GEORGETOWN INDEPENDENT SCHOOL DISTRICT

Melinda Eidson, Teacher - Primary
Merritt Romans, Principal - Primary

Mary Frances Radius, Counselor - Elementary

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Robert Foster, Teacher - Junior High

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Jocelyn Planta, Teacher - Elementary (Wimberley)
Gale Ponish, Teacher - Elementary (Wimberley)
Charles Ware, Teacher - Elementary (Wimberley)

Brenda DeViney, Teacher - Elementary (Kyle)
Martha Faulkner, Teacher - Elementary (Kyle)
Ernest Kimbro, Principal - Elementary (Kyle)
Beverly Shelton, Teacher - Elementary (Kyle)

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Marilyn Clack, Teacher - Middle School
Royce Swain, Principal - Middle School
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Carol Winkler, Teacher - Middle School

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Wallace Lee, Teacher - High School
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Nancy Spaulding, Teacher - Middle School

Hazel Sylvester, Supervisor K-8

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Peggy Mott, Teacher - High School
Naomi Pasemann, Counselor - High School
Dotty Rambo, Teacher - High School
Judy Rohde, Teacher - High School
Jeanne Sherry, Teacher - High School

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PROCEDURE

The modular approach to professional growth is an alternative to attending workshops and institutes which may be inconveniently located and to taking college courses which may be scheduled at times that are awkward for the individual. The modules can be used for independent study, for small group interaction, or for a large group in-service program. They have been designed to serve as a minicourse, an introduction to the study of gifted child education.

The following is a step-by-step description of the proper procedure.

1. Read the goals and objectives thoughtfully so that you know what is expected of you by completion of the module.

2. Read the rationale to establish a frame of reference.

3. Try the preassessment and compare your responses with those given in the preassessment evaluation.

4. Score your responses IF YOU WISH; then determine whether you will complete those activities specified in the section headed "Entry Level" or whether you will select the activities you feel you need.

5. Proceed to work with the activities identified.

6. Try the postassessment to find out how successful you were in attaining the established objectives.

7. Compare your responses with those given in the postassessment.

8. Decide whether you will recycle as directed, proceed to another module, or invest your time and energy in something else.

The other modules in the STAR POWER series are listed on the inside back cover.

CONTENTS

Module

Enabling Objectives	1
Rationale	2
Preassessment	5
Preassessment Evaluation	6
Preassessment (continued)	14
Preassessment Evaluation (continued)	15
Activities	19
Exploration of Interests	21
Process Training	42
Investigation	48
Postassessment	53
Postassessment Evaluation	54
Resources	55

Appendices

A.	"Tournament Structure in the Classroom"	58
B.	"Rube Goldberg, Meet Tom Edison"	60
C.	"Our Art Class Makes a Film" (film guide)	65
D.	"MGM for the Mentally Gifted Minor"	72
E.	"The Study of Birds"	74
F.	Expanded Study of Birds	78
G.	Research Unit - Insects	80
H.	"Dinosaurs"	82
I.	"Animal Babies"	84
J.	"Things to Do"	86
K.	"Kids in Print"	88
L.	"Future Studies for the Gifted"	90
M.	"Song of the Chattahoochee"	93
	"A Ballad of the Trees and the Master"	94
N.	"John Horace Burleson"	95
	"George Gray"	95
O.	"The Man with a Hoe"	96
P.	"Patterns"	97
	"My Fiddle"	99
	"The Courtin'"	99
Q.	Publishers' Addresses	100

R. Physical Science/Natural Science Audio-Tutorial Kits 102
S. Electronics Courses/Amateur Radio Novice-License Course/Advanced Digital Techniques Course 103
T. Measurement Skills/Telling Time Audio-Tutorial Kits 107
U. "A Seminar for Superior Students" 108
V. "Hall of Fame" 112
W. Independent Study (Lower Level Students) 113
What Is Independent Study? (Upper Level Students) 116
X. Sample Contract 125

About the Developers of the Program... 126

"WHAT DO WE DO NOW, TEACH'?"

"There is nothing so UNequal
As the equal treatment
Of unequals."
- Kay Coffey et al.
PARENTSPEAK, p. 7

GOALS: *To understand the true meaning of "enrichment" as applied to classroom activities for the gifted/talented and to discover materials useful and appropriate for this group of students.*

I. Enabling Objectives

After completing this module, you will be able to

1. Define the term *enrichment* correctly.
2. Discriminate between activities which are merely busywork and those which provide meaningful learning.
3. List at least 10 different kinds of enrichment activities which are stimulating and rewarding for the gifted/talented.
4. Describe 3-5 specific activities in detail, including their purpose and nature.
5. List and briefly describe 5-7 different commercial materials useful for enrichment.
6. List special opportunities available to gifted/talented students.
7. List at least 5 specific community resources in your area, including individuals, and show how they can be involved in enrichment activities.
8. Devise an individualized plan for one or more students needing special types of advanced work to develop particular talents.

II. Rationale

Many schools cannot afford full-scale programs for the gifted/talented, either because of limited financial resources or insufficient teaching staff; therefore, enrichment has been the solution adopted by these schools.

The word *enrichment*, however, has been much misunderstood and often abused. In too many places for too long, "enrichment" has been a cover-up for NO provisions for the gifted/talented. Elsewhere it has meant limited efforts merely to keep the gifted/talented busy when they finish assignments earlier than the rest of the group.

The reason for the misconceptions about what constitutes enrichment is probably two-fold: First, school personnel do not know - or do not think about - the true meaning of enrich. Second, they are not aware of what it means to be "gifted" or "talented." If informed that a child has an I.Q. of 130, an educator should realize that this is an abler learner than another child with an I.Q. of 92. But how much abler? And in what areas? Are two different students with the same I.Q. score equally gifted? Or does totaling verbal and quantitative sub-test scores mask special areas of giftedness?

I.Q. scores really tell very little about a child. MENTAL AGE might be helpful, since mental age supposedly represents the level of intellectual understanding and performance at which the child can function. But how many school personnel are aware that an 8-year-old with an I.Q.score of 130 on the California Test of Mental Maturity has

the MENTAL AGE of a 10½-year-old, whereas a 10-year-old with the same I.Q. score on the same test has the Mental Age of a 13½-year-old? In either case, the child is obviously advanced beyond many of his/her chronological peers. The 8-year-old (probably a third-grader) may function mentally like a FIFTH-GRADER, while the 10-year-old, presumably a fifth-grader, has the intellectual capabilities of an average EIGHTH-GRADER. What kind of enrichment efforts are appropriate to stimulate and challenge such children? Or to develop creative potential among students who are talented but whose I.Q. scores do not so indicate?

A variety of truly enriching activities is necessary and available for those who work with gifted/talented children. These activities are appropriate for different abilities, interests, needs, and learning styles. Some require minimal outlays of money for commercial materials. Others require no investment of money but a certain amount of teacher preparation time. Volunteer help from willing parents and the use of other community resources can eliminate or reduce even the preparation time. The activities suggested in this module are only samples of what teachers can devise. No reading levels or grade levels are indicated BECAUSE THEY ARE IRRELEVANT IN VIEW OF THE USUALLY ADVANCED LEVELS OF ACHIEVEMENT, the different types of giftedness, and the various subject areas of concern.

Enrichment activities should be based on the special characteristics and needs of the gifted/talented and reflect the knowledge provided by Bloom, Krathwohl, and Masia; Harrow, Guilford, Torrance, Williams, and others about the various facets and functions of intelligence and creativity. (See Modules 3 and 4 in this series.)

Moreover, enrichment activities should be PLANNED for further intellectual growth and development of talent. They should NOT be simply unrelated exercises which do not provide for progress, assigned without purpose as piecemeal offerings. Nor should enrichment activities be made available only "after the regular classwork is finished." MANY GIFTED/TALENTED STUDENTS DO NOT NEED ANY PART OF THE REGULAR CLASSWORK. It is not "good for their character" or "democratic" to require such students to complete the regular classwork simply because others have to. Students for whom the classwork will not be beneficial can be easily identified by pretests on the material involved; those who demonstrate mastery should be immediately directed to enrichment activities.

NOTE: *If you have successfully completed Modules 1, 2, 3, and 4, omit this section. If you have completed Modules 1 and 2 but not 3 or 4, skip Items 1 and 2 below.*

III. Preassessment

PLEASE DO NOT WRITE IN THE MODULE.

1. List 10 characteristics which, as clusters, are typical of the gifted/talented.

2. State 5 needs of the gifted/talented which differ from those of other students.

3. Various theories of intellectual development are especially pertinent for devising activities for the gifted/talented.

   a. List the stages of intellectual development observed by Piaget, and give an example of a task representative of each stage. Also indicate the approximate age group with which each stage corresponds.

   b. Compare the Taxonomies of the Cognitive, the Affective, and the Psychomotor Domains developed by Bloom and his associates and by Harrow.

   c. List the three major elements of the Guilford model, Structure of Intellect, with the different subdivisions for each. Give 3 examples with explanations of 3 groups of sub-components, such as ESI.

4. Describe the contributions of Torrance and Williams to the concept of creativity.

Turn to the next pages and compare your responses.

GT # 5

PREASSESSMENT EVALUATION

1. ANY 10 of the following:

(From California Blue-Ribbon Committee Study and Report on the Education of Gifted and Talented Youth)

* Is intellectually curious, innovative, and playful with ideas.
* Enjoys the challenge and involvement of intellectual and creative tasks.

Has a keen and sometimes unique sense of humor.

* Is an independent thinker and seeks to act independently.
* Develops at an early age an inner control and satisfaction which may lead to divergent and nonconformist behavior.

Formulates abstractions while very young and shows facility in moving from concrete to abstract levels of thinking and of communicating.

* Prefers complex tasks and processes information in complex ways.
* Reads at an early age and comprehends with advanced understanding.

Reads widely and reads intensively in areas of special interest.

* Acquires basic skills rapidly and with a minimum of practice.
* Comprehends advanced ideas, concepts, and implications.

Has an unusual ability to memorize.

Is impatient with detail and drill, which may result in gaps in basic skills for some.

Resists requirement of unnecessary detail in the completion of tasks.

* Explores wide-ranging and special interests not usually associated with children of his age and relates well to peers and adults who have similar interests.

Expends much energy and time in pursuing special interests and may be involved in numerous projects and activities.

* Employs high intellectual and creative skills in assessing his physical and social environment, in solving problems, and in creating products.

Generates many ideas and multiple solutions to problems.

Copes with environmental situations in resourceful and creative ways.

Expresses himself fluently, clearly, and forcefully with words, numbers, and creative products.

Demonstrates richness of imagery in informal language and brainstorming.

Has capability for extraordinary leadership and tends to assume leadership responsibility.

* Rebels against irrelevant learning requirements.

Points out conflicting societal values and challenges authority.

Becomes excited about new ideas but may not carry them through.

Creates and invents beyond the parameters of knowledge in the field.

* Can improvise with commonplace materials.
* Has high expectations of self and others which may lead to high levels of frustration with self, others, and situations.
  May tend to be a loner at least part of the time.
  May have a sense of his own uniqueness which leads to feelings of loneliness.

2. Needs: ANY 5 including AT LEAST 3 of those starred
   * Freedom from the restrictions of structured requirements and time allocations
   * Flexible program which includes a differentiated curriculum involving the higher cognitive concepts and processes
   * Time to experiment and explore
   * Open access to needed learning resources whatever and wherever they may be
   * Confrontation with societal problems and issues for which there is no single predetermined solution
     Opportunity to brainstorm
     Encouragement to ask questions, make discoveries, pursue own interests in depth
   * Opportunities to work with other gifted/talented students at least part of the time
     Wide variety of in-depth cultural experiences beyond the usual field trips to zoos, museums, industries...
     Opportunities to help others (e.g., as volunteer readers to the blind, as companions to the elderly...)

* Friendly recognition and acceptance of student's giftedness
* Introduction of students to own gifts (abilities)

Active concern for the gifted/talented among administrators, counselors, teachers.

Teachers who are facilitators of access to learning opportunities.

3. Contributions to concept of creativity
   a. Torrance: research with recent emphasis on futuristics and career education for the gifted/talented; development of tests (Torrance Tests of Creative Thinking: also Thinking Creatively with Sounds and Words with coauthor Joe Khatenea); many articles and books on creativity, including REWARDING CREATIVE BEHAVIOR, GUIDING CREATIVE TALENT, GIFTED CHILDREN IN THE CLASSROOM, EDUCATION AND THE CREATIVE POTENTIAL.
   b. Williams: model of creativity including three dimensions - curriculum areas, teacher behaviors (strategies for teaching), pupil behaviors (different types of both cognitive and affective responses); workbook based on the model: CLASSROOM IDEAS FOR THINKING AND FEELING,plus a teacher-training program to develop creativity
   c. Guilford's model, Structure of Intellect - a three-sided cube
      Major components: Operation, Product, Content
      Operation has 5 sub-components: Cognition, Memory, Convergent Production, Divergent Production, Evaluation
      Content has 4 sub-components: Figural, Symbolic, Semantic, Behavioral

Product has 6 sub-components: Units, Classes, Relations, Systems, Transformations, Implications.

Any sub-component from each of the three major components can combine to form a triad representing a particular function of intelligence. For example, Cognition (comprehension) of Classes of Semantic nature could involve understanding of groups of words, such as verbs; Cognition of Classes of Symbolic nature, understanding of groups of numbers with specific meanings, such as telephone numbers, not just numbers at random. Another example: Convergent Production of Figural Systems - giving a predetermined answer about a related series of shapes, such as arranging a square, rectangle, circle, cube, and octagon in a prescribed manner. A third example: Divergent Production of Symbolic Transformations - giving as many possibilities as time or circumstances allow with regard to finding little words embedded within a multi-syllabic word.

4. Theories

   a. Piaget: Stages of intellectual development

      (1) Sensorimotor (ages birth to 4) Sample task: Ability to find an object hidden while child watches.

      (2) Pre-operational (ages 4 to 7 or 8) Sample task: Ability to recognize the unchanging amount of a substance, such as clay, compared with an equal amount when the first has been changed in shape, or to recognize the unchanging number of items regardless of their rearrangement.

(3) Concrete operations (ages 7 or 8 to 11 or 12)
Sample tasks: Ability to classify: by shape, by sound, by category (example - fruits, vegetables); ability to arrange items of different sizes in correct sequence from smallest to largest or vice versa.

(4) Formal operations (ages 11 or 12 through adolescence)
Sample task: Ability to explain what happens to a streak of water on a chalkboard; ability to distinguish between true and false parts of syllogisms; ability to explain the operation of a lever or a pulley in terms of effort required; ability to explain what happens to kinetic energy when the temperature is hot or cold; ability to apply selected literary terms in original sentences reflecting understanding of the terms.

b. Taxonomies

(1) Cognitive: 6 categories arranged from lowest level of mental functioning to highest -
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

(2) Affective: 5 categories arranged from lowest level of emotional functioning to highest -
Receiving
Responding
Valuing
Organizing
Characterizing

(3) Psychomotor: categories arranged from lowest level of physical functioning to highest -
Reflex Movement
Basic Fundamental Movement
Perceptual Abilities
Physical Abilities
Skilled Movement
Nondiscursive Communications

(NOTE: Simpson's taxonomy is different from Harrow's, the one given. Her grouping would be equally acceptable: Perception, Set, Guided Response, Mechanism, Complex Overt Response, Adaptation, Origination.)

SCORING

Item 1: Allow 2 points for each characteristic which was marked with an asterisk (*) and 1 point for each of those which were not so marked.

Item 2: Allow 2 points for each need which was marked with an asterisk and 1 point for each of those which were not so marked.

Item 3:

a. Allow 1 point for each correctly named stage plus 1 point each if in proper sequence.

Add 2 points for each age group correctly associated with the stage and 1 point for each task described if it was appropriate for the stage.

b. Allow 1 point for each category in the three different domains and an additional point for each category in the correct sequence.

c. Allow 3 points for each of the three major components: Operations, Products, Content.

Add 1 point for each correct sub-component listed under the appropriate major component.

Add 3 points for each example with explanation of individual facets of intelligence.

Item 4: Add 1 point for each item of information given about Torrance and Williams. If you explained the Williams model of creativity and/or gave examples, add 3 points for each correctly presented explanation or example.

Turn to the next page to interpret scores.

Entry Level

Item 1: *Mastery is represented by a score of 17 or better. If you scored LESS than 17, DO NOT PROCEED WITH THIS MODULE. Complete Module # 1 first.*

Item 2: *Mastery is represented by a score of 7 or better. If you scored LESS, DO NOT PROCEED WITH THIS MODULE. Complete Module # 2 first.*

Item 3:

a. *Mastery is represented by a score of 17 or better. If you scored less than 17, DO NOT PROCEED WITH THIS MODULE. Complete Module # 3, Part 1, Piaget's Theory (Intellectual Development)*

b. *Mastery is represented by a score of 29 or better. If you scored less, DO NOT PROCEED WITH THIS MODULE. Complete Module # 3, Part 2, Taxonomies of the Cognitive/Affective/Psychomotor Domains.*

c. *Mastery is represented by a score of 28 or better. If you scored less, DO NOT PROCEED WITH THIS MODULE. Complete Module 4, Part 1, Guilford's Structure of Intellect Model.*

Item 4: *Mastery is represented by a score of 5 or better. If you scored LESS, DO NOT PROCEED WITH THIS MODULE. Complete Module # 4, Part 2, Creativity.*

Preassessment (continued)

PLEASE DO NOT WRITE IN THE MODULE.

If you prefer to check your answers as you complete each item, turn to the page(s) indicated in parentheses below the item.

1. Define the term *enrichment* correctly.

   (Page 15)

2. List 8-10 different kinds of enrichment activities which are stimulating and rewarding for the gifted/talented.

   (Pages 16, 17)

3. List the titles of at least 5 commercial materials useful for enrichment.

   (Page 15)

4. List special opportunities available to gifted/talented students on a regional, state, or national level.

   (Pages 17, 18)

5. List 5 specific community resources, including individuals, and show how they can serve the needs of the gifted/talented.

   (Page 15)

If you did not check your answers while you were working, turn now to the pages listed below and compare your responses.

Number 1: Page 15
Number 2: Pages 16, 17
Number 3: Page 15
Number 4: Pages 17, 18
Number 5: Page 15

PREASSESSMENT EVALUATION (continued)

1. *Enrichment* refers to activities which

   * take a student beyond his/her present level of achievement
   * extend an individual's knowledge and experience.
   * make the student's life fuller, more meaningful, more rewarding.
   * open doors to new interests.

3. Titles of recommended commercial materials vary widely, depending on the levels and interests of the gifted/talented: ANY 5 or equivalents

   a. Wff'n Proof games: e.g., Tri-Nim, Queries 'n Theories, Propaganda...
   b. Interact,simulation: e.g., Puzzles, Search, Ecopolis, Dig...
   c. RAFA RAFA, a simulation produced by Simile II
   d. CLASSROOM IDEAS FOR THINKING AND FEELING, by Williams(D.O.K. Publishers)
   e. MAKING IT STRANGE, Books 1,2,3,4(Harper and Row)
   f. S.O.I. Abilities Workbooks (S.O.I. Institute):

Cognition	Divergent Production
Memory	Evaluation
Convergent Production	

   g. GRAPH GALLERY PATTERN BLOCKS COLORING BOOK
      TANGRAMATH CREATIVE CONSTRUCTIONS
      LINE DESIGN PAPER AND SCISSORS POLYGONS
      and other products from Creative Publication, Inc.
   h. IMAGIN-ACTION, a series of pantomime assignments for Doing Things, Showing Feelings, Being Things (D.O.K. Publishers)
   i. TEACHING HUMAN BEINGS: 101 Subversive Activities for the Classroom, by Shrank (Beacon Press)

5. Community resources: ANY 5 with specific names

   a. Museums, art galleries, theaters for live performances, concert halls...
   b. Specific agencies interested in education (e.g., American Association of University Women, Phi Delta Kappa, PTA, Boy Scouts, Girl Scouts, Future Farmers of America, 4-H Clubs)
   c. Colleges/universities
   d. Professors and school teachers with expertise and interest in special areas and willingness to help youth outside of school time
   e. Members of the community with expertise and interest in special career or hobby areas and willingness to help youth

2. Examples of different types of enrichment: ANY 8-10

   a. Specially designed games for the gifted/talented appropriate for the mental level of the child

   b. Puzzles of various types, complex enough to challenge

   c. Simulations

   d. Minicourses on a variety of topics, also seminars

   e. Special projects planned WITH the student according to his/her interests

   f. Creative assignments following up or connected with a favorite subject area assignment

   g. Debates/symposia on topics of special interest

   h. Performing arts group composed of student writers, singers, dancers, musicians, actors, artists to prepare and present programs at other schools, for community organizations, etc.

   i. Activities to teach specific thinking skills and logic

   j. Correspondence courses on an advanced level or in subject areas not available at school

   k. Programed texts (branching type) for advanced courses or for some not available at school

   l. Involvement in regional, state, and/or national contests

   m. Guidance workshops or seminars on topics of interest and concern to gifted/talented

   n. Workshops for career education

   o. "Field trips" to concerts, plays, ballet, operas...with previous preparation and arrangements to meet performers

   p. Workshops for the arts

   q. Children's theatre presentations by students to elementary or primary level school children

   r. Photography/graphic arts/film making

s. Use of specially designed Things to Do Boxes

t. Development of Things to Do Boxes for students in lower grades or in socioeconomically disadvantaged areas or cultural heritage Things to Do Boxes for students in suburban Anglo middle class schools

The following are typical assignments which are NOT enriching:

a. Additional work at the same level where mastery has already been demonstrated

b. Library reports on topics of no interest or concern to students

c. Grading papers for the teacher

d. Running errands for the teacher

e. Tutoring students in remedial areas just to keep students busy

f. Playing games without purpose or without understanding of thinking skills involved

g. Clerical work in the school office

4. Special opportunities

a. Participation in contests sponsored by the University (of Texas) Interscholastic League: dramatics, debate poetry interpretation, writing, music, as well as athletics

b. Participation in Texas Student Film Festival

c. Participation in Scholastic Awards program: Writing, Art, Photography

d. Participation by juniors and seniors (in schools which belong to the Small Schools Association) in summer Honors Seminars sponsored by the Texas Education Agency and a Texas college.

e. Participation in special summer sessions open to students in grades 6, 7, and 8 and others for grades 9-12 at universities in Texas or in a five-week summer session at the University of Guadalajara in Mexico (scholarships available; $250 for food, lodging, instructional costs) sponsored by Gifted Students Institute, Arlington, Texas

f. Participation in the national competition for the Exploration Scholarship Program (accompanying leading scientists on field expeditions in archaeology, astronomy, anthropology, geology, ecology, and marine science)

g. Participation in a competition for a Youthgrant for special projects, offered by the National Endowment for the Humanities for a federal grant to undertake projects similar to those undertaken by experienced professionals; preference given to high school students

IV. Activities

It is difficult to separate the following suggested activities into grade levels or content areas because the interests and ability levels of gifted/talented students vary so much, also because many topics lend themselves to a spiraling approach. They may appear in fourth grade, later in a more advanced nature in ninth grade, and again in still more sophisticated form in twelfth grade.

Joseph Renzulli proposes a three-way approach to enrichment in The Enrichment Triad Model:

I. Exploratory Activities - to help students become aware of interests they didn't know they had, providing interest centers of a more stimulating nature than would be available to students of average or below average ability and arranging visitations or field trips, NOT just for observation, but especially for interaction with the people involved - e.g., artist studios and galleries, symphony concert rehearsals, plays...

II. Group Training Activities - in the various thinking, feeling, and creative processes to develop the powers of the mind.

III. Individual and Small Group Investigations of Real Problems - with emphasis on the word investigation and an expanded interpretation of it to include primary resources and personal data collection and analyses.

The activities listed in this module are organized, therefore, according to

EXPLORATION OF INTERESTS

PROCESS TRAINING

and INVESTIGATION.

Some are obviously better suited to lower grade levels, some to secondary school. Some overlap levels. Educators must decide for themselves which would work best with their group(s) of gifted/talented.

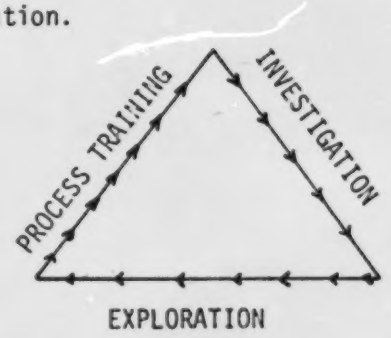
(Materials mentioned are in the kit unless otherwise noted. The last pages of the module list information about publishers and early 1977 prices for those who wish to purchase materials. Request for catalogs before ordering will bring not only the most recent prices, but also a wealth of information about exciting items for enrichment).

Importants points to remember:

1. Keep groups small for effective interaction.
2. Encourage creative activities, not just academic ones, regardless of subject area.
3. Avoid assigning grades or giving tests if possible.

NOTE: The exploration of interests should be a continuing process, opening new vistas and wider horizons. The three phases - Exploration, Process Training, and Investigation - should be successive stages in an activity, each leading naturally to the next; then cycling through the same three again, instead of devoting a couple of weeks to Exploration, later weeks to Process Training, etc. These are not separate types of enrichment activities, but continuously moving stages toward accomplishment of the third stage, Investigation.

Module users are encouraged to read Renzulli's THE ENRICHMENT TRIAD - in the kit.



GT # 5

EXPLORATION OF INTERESTS

Skim through these and select appropriate activities. Do not underestimate your gifted students' abilities.

1. With one or more colleagues, learn to play one of the following Wff'n Proof games (in the kit). Then teach it to a group of your gifted/talented students. Or let them discover how to play the game by themselves, following the directions provided. (Be sure you can explain any steps or procedures not clear to the students). Have your students discuss different kinds of mental functions involved in playing the game (s).

   a. ON-WORDS (See "Tournament Structure in the Classroom," Appendix A, pp. 58, 59.)
   b. TRI-NIM
   C. WFF 'N PROOF

2. Examine carefullly one of the following simulations (in the kit). Use it with your gifted/talented students as directed. (Ignore the company's recommended grade levels.) Keep anecdotal records of progress, of any difficulties encountered, of student reactions...

   a. RAFÁ RAFÁ b. COPE c. DISUNIA

   Evaluate the activity as an enrichment experience. Share your results with interested colleagues.

3. Examine the following math materials (in the kit):

   a. LINE DESIGN (geometric string art)
   b. TANGRAMATH (basic introduction to geometric shapes)
   c. GRAPH GALLERY (using math to plot pictures and designs
   d. PUZZLE POSTERS (for higher levels)

   and try one or more with your gifted/talented students.

   Evaluate the results in terms of their effectiveness as true enrichment according to the definition on page 15 (Number 1) in the module.

4. Plan an "Invention Workshop." Read the article, "Rube Goldberg, Meet Tom Edison," (in Appendix B, pp. 60+). Collect the treasured junk needed as described, and prepare an "inventor's kit" for each interested student.

   Provide the necessary freedom and encouragement to develop whatever each student's inventiveness can produce.

5. Provide opportunities for non-verbal communication with IMAGIN-ACTION pantomimes (in the kit).

   Use these as a basis for developing similar mimes according to the three areas: Doing Things, Showing Feelings, Being Things.

6. Skim STAGE: A Handbook of Classroom Ideas to Motivate the Teaching of Elementary Dramatics (in the kit)

   OR

   IMPROVISATION FOR THE THEATER: A Handbook of Teaching and Directing Techniques (also in the kit). This is such a comprehensive guide it is worth having available for frequent reference, but PLEASE - not from the kit!

   Read pp. 18-46 to become familiar with the author's framework for activities of "problem solving" situations and "Point of Concentration."

   Select activities scattered throughout pp. 49-88 for your gifted/talented students or let them make their own selections.

7. Show the film, OUR ART CLASS MAKES A FILM (in the kit). Read the accompanying film guide prior to and after showing the film. See film guide in Appendix, pp. 65 +).
   Encourage your gifted/talented students to join forces in planning, developing, and shooting a film for any content area.

8. Have students plan and present puppet shows for the enjoyment of younger students or students in another school.

   The films listed below (availabe at Region XIII Education Service Center: 458-9131) provide useful background information or serve as stimuli.

Schools and Planning: The Puppet Show Caper (How a class plans and produces a puppet show)	11 min. #10600
The Shoemaker and the Elves	14 min. #20350
Little Red Riding Hood	10 min. #10808
Musicians in the Woods	11 min. #21230
Paul Bunyan and the Blue Ox	6 min. #10839
Orpheus and Eurydice	10 min. #10970

Puss in Boots (Marionettes, not puppets) 16 min. #20662

A Look at You 13 min. #10928
(Puppets used to introduce the five senses)

The content in the films listed includes a how-to science (or health) lesson in addition to the familiar childhood stories, a tall tale, and a myth. Students may want to use the same kind of material. Other possibilities are fables and legends. Here, too, ethnic material would be good. Puppet shows could be prepared in Spanish, using traditional llorono legends, or in French using fables.

Historical incidents can be the basis of performances by puppets with students completing research for specific facts and details during history class, then converting the information into script form with one puppet narrating while the other puppets appear in tableaux.

Math and science concepts can also be presented through the use of puppets.

9. LIBRARIANS OR TEACHERS: Design a Junior Great Books program for the gifted/talented you work with. Select the books, review them, organize a reading-and-discussion group. Read M G M (Appendix D, pp. 72 +. (NOTE: You may wish to use books that have won awards, such as the Newbery Medal Books for a beginning).

10. Read one or more of the following materials in Appendices E, F, G, H, and/or I. (These were designed for primary grades).

E. "The Study of Birds: pp. 74+
G. "Research Unit - Insects" pp. 80+
H. "Dinosaurs" pp. 82+
I. "Animal Babies" pp. 84+

Then try one of these units with gifted/talented students interested in the subject or develop your own unit, using the same format for one or more subjects of concern to your group:

Frame of Reference
Aims of the Unit
Questions to Be Discussed
Development
Reading Assignment (Ask your librarian for suggestions.)
Questions to Guide Study
Activities (Provide a variety.)
Vocabulary List (These are key words to be mastered.)

For older groups you might try the expanded study of birds in Appendix F, pp. 78.

The extent of the section on bird study is intended to illustrate how other topics can be expanded for an older group of the gifted/talented: animals (domestic or wild), insects (several science fiction books could come into this, leading to a subsequent consideration of genetic mutation and the very real possibility and problem this now poses in scientific laboratories, also as a result of insects which have become resistant to pesticides and seem to thrive on them), prehistoric creatures other than dinosaurs....

11. Another project for gifted/talented students in the primary grades involves the usual study of the post office. (Designed by Catherine Stevens, Pedregal School, Palos Verdes Peninsula Unified School District, California). (Martinson, 1974).

    a. The teacher reads stories about the early days of mail carrying.

    b. Then a small group visits the post office with the principal to discover important functions to be pointed out to the others. Postal terms are discussed before the visit, two children making a dictionary of terms for class use and reference.

    c. During the field trip to the post office, students learn about the handling of mail today with the help of technological advances compared with the way mail was handled only a few years ago, the means for transporting mail, different postal rates, and through discussion with mail carriers and clerks what their jobs are like and what kinds of problems they encounter.

    d. Some children may become interested in the Pony Express and mail delivery by stagecoach and read widely, while others can begin or continue stamp collections, reading about the countries from which the stamps came and sharing their findings.

12. Read Dorothy Sisk's article, "Things to Do" (Appendix J, pp. 86+). Have your gifted/talented students create Things to Do Boxes for gifted/talented students in lower grades or for children in hospitals or special schools. The students should start with a stimulus (such as a book, filmstrip, or record) and add a variety of materials and activities appropriate for the topic.

13. Where Are My Roots? (Margaret Ann Gibbs, Teacher of the Gifted, Port Huron Area Schools, Port Huron, Michigan) From TALENTS AND GIFTS, Summer, 1974. pp. 27, 28. Published by The Council for Exceptional Children, TAG Division.

(continued)

GT # 5

"The study of a topic such as an "Interesting Ancestor" will provide the gifted youngster with the opportunity to discover for himself the commonalities of families, to generalize about families, and to learn also about cultural differences.

Research is done on one older(living or deceased) member of the family or favorite aunt, uncle, or grandparent, etc. Information is gathered through a personal interview or interviewing through letter writing, so that notetaking and quoting are part of the preparation. Outlining and final polishing are skills acquired along the way, and oral reading and attentive listening are included upon completion of the assignment.

Researching the life of an individual would provide answers to such questions:

1. What was the locale of his birth - city, township, country,etc.?
2. What schools did he attend - one room, college, etc.?
3. What were the clothing styles like?
4. What kinds of hobbies, games, recreations did he enjoy?
5. What were the favorite family foods - obtain a recipe if possible?
6. What were the family customs - Christmas, Easter, etc?
7. When, where and whom did he marry?
8. Who were the children and how many were in the family?
9. What was his career or life's work?
10. What special trips or vacations did he take - where, when? Name his favorite.
11. When and where did he retire?
12. Include pictures, if possible. Also eye-witness accounts of historic events at that time, liven up the report.

Following the oral report, youngsters can pinpoint on a large world map where their ancestors came from and where they migrated to. This should generate some questions about:

(continued)

1. Where did the centers of population seem to be?
2. Was there a specific area they migrated to?
3. What kinds of trades or skills did they bring with them?
4. How did these skills help them in securing employment?
5. How has their skill or trade changed in the ensuing years?
6. What cultural customs has the family maintained today?

This kind of creative writing assignment provides a youngster of any age the opportunity to find out more about himself, his family, his heritage, and will provide a basis of understanding of others. There may be some youngsters who would be interested in tracing their family tree.

Youngsters need to know that creative writing is a way of communicating our ideas to others - because they may be important, because they may be moving, funny, or wild.

As a final activity, youngsters could have an "ethnic luncheon," sharing favorite family recipes with other members of the class.

14. Have your gifted/talented students write stories for younger children in which the younger children are the heroes/heroines. For example, fifth-graders in a school in Virginia interviewed 30 first - graders. The teacher introduced the idea with a discussion of how hard it is for some children to learn to read and how much fun it would be to have a story in which the hero/heroine is oneself. Interview questions were considered and listed; then pairs of children clustered around the library with the older ones gently asking questions of the first-graders.

Back in the classroom, the fifth-graders developed their stories around the answers to the interview questions, expanding on them to make the stories more interesting. The stories were then typed on a primary typewriter. Covers were made from sturdy corrugated cardboard and attractive paper. Illustrations were created; then the stories were stapled inside the covers.

Each fifth-grader met with his/her own first-grader and read the story to the younger child; then the first-grader read the story back to the writer. The first-grader took the story with him/her. (It is recommended that at least TWO copies of each book be made so the author can have a copy, too!)

(From "Fifth - Graders Were Authors; First - graders the Heroes," by Louise McClenathan, INSTRUCTOR, November, 1975.)

NOTE: For students who would like to have their stories published and read by a wider audience, an article in Appendix K, *"Kids in Print," lists 15 commercial magazines which accept different kinds of student-written materials.*

15. Have a workshop for gifted/talented on "The Needs of the World in 2000." First, have the group brainstorm things that our world needs. Have these recorded without comment or criticism. Then categorize items into five major needs. Ask each person in the group to name one special ability he/she has with which to respond to the needs of the world and how this ability could be used.

16. For other activities related to the future, see Bleedorn's article in Appendix L pp.90+.

17. Multi-gifted students often have difficulty deciding on a career because they are equally able and interested in more than one area . As a result. they frequently do not believe they are gifted at all. With today's combining of different disciplines, more options are available in which at least two equally strong interests and abilities can be used.

    Have students find THE IMMENSE JOURNEY, by Loren Eiseley
    WIND, SAND, AND STARS, by Antoine de St. Exupery
    SILENT SPRING, by Rachel Carson
    or other books in which the authors have taken an interdisciplinary approach to the subject. (Check with the librarian.)

    Conduct a discussion including the following questions:

    How does each author take an interdisciplinary approach to his/her subject?

    What kind of relationships does each author bring out (e.g., one individual to others, the individual to society, the individual to the universe, the individual to the past, present, future)?

    How has each student benefited from reading material by authors whose backgrounds are diverse and who emphasize a variety of relationships?

    Why is such an approach of interest?

18. Have one or more interested students read Ben Franklin's AUTOBIOGRAPHY and discuss Franklin's system for self-improvement. Encourage the student(s) to keep personal notebook(s) of similar plans for self-improvement, experiences, and observations of results.

19. Have your musically gifted/musically talented students compose a musical composition based on a poem.

(continued)

"Song of the Chattahoochee" lends itself well to a concerto or a symphony and has been used successfully with gifted students in secondary schools by the senior writer of this module. Sidney Lanier, its author, was one of the South's greatest poets and a professional musician as well. (Appendix M, p. 93)

If your students cannot actually write the music, have them describe in writing what instruments would be used for what purposes, how the instruments would interact, where the student would use variations in tempo and for what particular effects... and, if possible, indicate the notation for the main musical theme, specifying what it represents.

OR use a poem like "Fire and Ice," by Robert Frost (page 242 in POEMS - in the kit - for a composition of a contemporary song of ideas..

OR use "The Ballad of William Sycamore," by Stephen Vincent Benet, for a country/western ballad...

OR for a gospel song, use the words from Sidney Lanier's "A Ballad of the Trees and the Master" (Appendix M, p. 94) or Countee Cullen's "Simon the Cyrenian Speaks."

20. Have artistically talented students paint impressionistic pictures based on poems inspired by the Imagists like the poems below by John Gould Fletcher and Amy Lowell.

THE SKATERS

by John Gould Fletcher

Black swallows swooping or gliding
In a flurry of entangled loops and curves;
The skaters skim over the frozen river.
And the grinding click of their skates as they impinge
upon the surface,
Is like the brushing together of thin wing-tips of silver.

(continued)

Music

by Amy Lowell

The neighbor sits in his window and plays the flute.
From my bed I can hear him,
And the round notes flutter and tap about the room,
And hit against each other,
Blurring to unexpected chords.
It is very beautiful,
With the little flute notes all about me,
In the darkness

In the day time,
The neighbor eats bread and onions with one hand
And copies music with the other.
He is fat and has a bald head,
So I do not look at him,
But run quickly past his window.
There is always the sky to look at,
Or the water in the well!

But when night comes and he plays his flute,
I think of him as a young man,
With gold seals hanging from his watch,
And a blue coat with silver buttons.

As I lie in my bed
The flute notes push against my ears and lips,
And I go to sleep, dreaming.

21. Introduce this activity with Dickinson's "A Cemetery."

A Cemetery

This quiet Dust was Gentlemen and Ladies,
  And Lads and Girls;
Was laughter and ability and sighing,
  And frocks and curls.

This passive place a Summer's nimble mansion,
  Where Bloom and Bees
Fulfilled their Oriental Circuit,
  Then ceased like these.

(continued)

Then have your gifted/talented students read some of Edgar Lee Master's poems like "John Horace Burleson" and "George Gray" in Appendix N, p. 95.

Afterwards, take your students to a cemetery where they can read and make notes about some of the tombstone epitaphs and names, using these as a springboard into imagining the lives and fates of those buried, composing poems about the imagined lives.

22. Using some of the poems in Activity 19 or 20 (or other poems which may be more appropriate for your students), have students choreograph and present original dances - modern, ballet, etc. - to communicate the ideas contained in the poem.

23. Using poems about persons as inspiration, have students talented in art sculpt a bust of the character.

EXAMPLE:

Anne Rutledge

by Edgar Lee Masters

Out of me unworthy and unknown
The vibrations of deathless music:
"With malice toward none, with charity for all."
Out of me the forgiveness of millions toward millions,
And the beneficent face of a nation
Shining with justice and truth.
I am Anne Rutledge who sleep beneath these weeds,
Beloved in life of Abraham Lincoln,
Wedded to him, not through union,
But through separation.
Bloom forever, O Republic,
From the dust of my bosom!

OR

sculpture a full figure based on a poem like "The Man with a Hoe," by Edwin Markham (Appendix O, page 96).

24. Have a group of gifted/talented students select a narrative poem, such as Robert Frost's "The Death of the Hired Man" or, for more mature students, "Home Burial," in Robert Frost's POEMS, pages 26-30 in the kit.

The group should decide on roles: director, photographer, sound technician, script writer... A storyboard must be prepared with each scene described or drawn in a different "frame." All necessary props and/or background should be selected while actors are memorizing lines. Then the photographer with a motion picture camera shoots the scenes, and the sound technician with a reel-to-reel tape recorder records the dialog. The writer or the entire group can work on editing the final film.

THE DEATH OF THE HIRED MAN

by Robert Frost

Mary sat musing on the lamp-flame at the table
Waiting for Warren. When she heard his step,
She ran on tip-toe down the darkened passage
To meet him in the doorway with the news
And put him on his guard. "Silas is back."
She pushed him outward with her through the door
And shut it after her. "Be kind," she said.

SAMPLE SCRIPT:

Scene: Kitchen of a farmhouse. Table at right center stage with kerosene lamp lit. Rest of stage dark. Spotlight on Mary.

AUDIO	VIDEO
	(MARY SITS MUSING, LOOKING AT THE FLAME OF THE KEROSENE LAMP ON THE TABLE.)
OFF CAMERA: (SOUND OF FOOTSTEPS)	
	(HEARING THE STEPS, MARY RUNS ON TIP-TOE TO LEFT. SPOTLIGHT HOLDS ON MARY. DOOR OPENS AND WARREN ENTERS.)
MARY: (QUICKLY) Silas is back.	

(SHE PUSHES WARREN OUTSIDE WITH HER AND SHUTS THE DOOR. THEY STAND ON THE PORCH.)

MARY: (PLEADING) Be kind.

(** See pages 160-167 in Robert Frost's POEMS - in the kit.)

25. Have a day devoted to monologs, choral readings, and individual poetry readings. Help students select and rehearse as needed.

Some of Frost's narrative poems make good monologs, such as the following:

"Wild Grapes"	pages 55-58
"The Gum-Gatherer"	pages 120, 121
"The Census-Taker"	pages 178-180

Other possibilities:

"Patterns" by Amy Lowell	Appendix P, pages 97+
"My Fiddle" by Riley	Appendix P, page 99
"The Courtin'" by Lowell	Appendix P, page 99

NOTE: Both "My Fiddle" and "The Courtin'" are written in dialect and students may need assistance with these.

Have a day devoted to ethnic selections representative of the different cultural heritages of individuals.

26. Read one or more sections of Shrank's TEACHING HUMAN BEINGS - in the kit - and try some of his suggestions with your gifted/talented students.

NOTE: The following films suggested by Shrank are available through the Education Service Center, Region XIII (phone 458-9131 - Instructional Resources Center).

Chapter 1: Sense	Kevin 16 min. # 211101
	Dream of Wild Horses 9 min. #11105
	Sky 10 min. # 11475

Chapter 2:	Hidden Assumption	Why Man Creates 25 min. #30373
Chapter 3:	Chemicals and the Body	Beyond LSD 25 min. #30009
		Drugs and the Central Nervous System 18 min. #20102
		Drugs: Facts Everyone Needs to Know 29 min. #30400
		Hooked 20 min. #20175
		LSD: Insight or Insanity 28 min. #20581
		LSD: The Spring Grove Experiment, Part 1 and Part 2 54 min. #30130
		Marijuana 34 min. #30718
		Marijuana: The Great Escape 20 min #21602
		Speedscene: The Problem of Amphetamine Abuse 17 min. #21145
		US 28 min. #30474
Chapter 5:	Learning about Death	The Day Manolete Was Killed 18 min. #20805
		Occurrence at Owl Creek Bridge 27 min. #30650

27. Have students with special interests work with programmed textbooks. The following are just a few of many available in a variety of subjects. (All prices are based on 1978 issue of BOOKS IN PRINT - TITLE SECTION.)

Art Appreciation

ART & CIVILIZATION, 2nd. ed. B.S. Myers. $15.95 test and $2.95 teacher's manual and $5.95 study guide. McGraw-Hill.

(continued)

Music Appreciation

THE ART OF LISTENING: DEVELOPING MUSICAL PERCEPTION, 3rd Ed. Jeanne S. Bamberger and Howard Brofsky. $9.95 text and $16.95 set of 7 records (instructor's manual FREE). Harper & Row.

SCORED FOR LISTENING: A GUIDE TO MUSIC. 2nd Ed. Guy A. Bockman and William J. Starr. $6.95 text and $10.95 records. Harcourt Brace Jovanovich.

PROGRAMMED INTRODUCTION TO THE FUNDAMENTALS OF MUSIC. 2nd Ed. Theodore H. Ashford. $8.95. William C. Brown.

Photography

GETTING STARTED IN PHOTOGRAPHY. Les Barry. $10.95. Prentice-Hall, Inc.

DISCOVER YOUR SELF THROUGH PHOTOGRAPHY. Ralph Hattersley. $9.95. Morgan.

Logic

ELEMENTARY LOGIC, 2nd Ed. Benson Mates. $8.00 Oxford University Press.

Psychology

HUMAN BEHAVIOR: A PROGRAM FOR SELF-INSTRUCTION. Leslie F. Malpass. $8.95 and $2.95 instructor's manual. McGraw-Hill.

SELF-INSTRUCTIONAL PROGRAM IN PSYCHOLOGY AND EFFECTIVE BEHAVIOR. James G. Hunt. $4.95. Scott Foresman.

SELF-INSTRUCTIONAL PROGRAM IN PSYCHOLOGY, 3rd Ed. Norman T. Bell. $4.95. Scott Foresman.

Data Processing

INTRODUCTION TO DATA PROCESSING. M.L. Harris. $4.95. Wiley.

DATA PROCESSING SELF-STUDY KIT (includes Introduction to Data Processing, $7.95; Introduction to Magnetic Discs, $7.95; Introduction to Integrated Data Store, $7.95; Time-Sharing's BASIC Language, $7.95). $25.00. General Electric Company.

Miscellaneous

PROGRAMMED BLUEPRINT READING, 2nd Ed. Shriver L. Coover and Helsel Coover. $7.72. McGraw-Hill.

PROGRAMMED COURSE IN BASIC ELECTRICITY, 2nd Ed. New York Institute of

Technology. $9.95 plus $1.50 instructor's manual. McGraw-Hill.

TEACH YOURSELF LIP-READING. Olive M. Wyatt. $5.85. C.C. Thomas.

PROGRAMMED INSTRUCTION IN BRAILLE. Samuel C. Ashcroft and Freda Henderson. $13.00. Stanwix.
(Publishers' addresses in Appendix Q, pages 100 +.)

SCIENCE

28. Encourage interested students among the gifted/talented to create a hydroponic garden. See the booklet in the kit.

    A completely equipped kit can be purchased from Earth Products Company, or the individual elements described can be obtained at local nurseries and assembled.

    Have students complete the Activity Cards in the booklet.

29. Encourage your science-oriented students to have "fun with the sun," using SOLAR SCIENCE PROJECTS For a Cleaner Environment, by D.S. Halacy, Jr. (in the kit).

30. Have students read the theory presented by Winkless and Browning in CLIMATE AND THE AFFAIRS OF MEN (in the kit), regarding the influence of heavy accumulations of dust in the atmosphere. Then have them read THE HAB THEORY, a novel by Allen W. Eckert (also in the kit), which develops a theory of polar shift, the causes and the effects.

    Encourage the students to select the theory which seems more plausible to each and to investigate the facts to determine whether either theory has validity based on the facts. Debates or symposia will provide opportunities to share what has been learned.

    (As an introduction to this activity, reference can be made to

Alfred Wegener's theory of continental drift, which occasioned much ridicule during his time and ours until modern scientists developed the study of plate tectonics which has proved that at one time the various continents were, indeed, one supercontinent but that parts separated and drifted away as the result of some tremendous force.)

31. Encourage students to investigate the "mystery of the Bermuda Triangle" to determine whether or not there are strange forces (and, if so, what they may be) which are causing people and objects to seem to vanish without a trace...

OR

to select some other unexplained "mystery" in science and find out what is known about the circumstances. Have the students plan ways to share their findings.

32. Audio-tutorial kits are available from Encyclopedia Britannica Educational Corporation (425 N. Michigan Ave., Chicago, Il 60611) for Physical Science and for Natural Science for $113.50 each. Not only do these kits contain all lab materials needed, but they also have several sound filmstrips, a teacher's guide, and 15 guides for "laboratory assistants."

Physical Science deals with these topics:
- Electric Current
- Light and Lenses
- Magnetism
- Simple Machines
- Static Electricity

Natural Science topics are as follows:
- Body Chemistry
- Matter and Change
- Plant Growth
- Streams and Erosion
- Weather

(See Appendix R, p.102.)

33. Other scientific audio-tutorial kits are sold by Heath Company, Benton Harbor, Michigan 49022, and are called Heathkits. These also have all necessary parts plus text material and recordings for self-instruction. The following topics are available now (early 1977): See Appendix S, pp. 103..

Course 1: DC ELECTRONICS	$ 39.95
Course 2: AC ELECTRONICS	39.95
Course 3: SEMICONDUCTOR DEVICES	39.95
Course 4: ELECTRONIC CIRCUITS	49.95

Each course requires a Basic Experimental Trainer, which can be ordered factory assembled or as a kit to be put together according to detailed instructions. The same trainer is used with each course. All four courses can be purchased as a unit for $ 199.95. (If cassettes are preferred to records, each set per course costs an additional $ 6.95.)

Heathkits are also available for

AMATEUR RADIO NOVICE LICENSE COURSE $24.95 + optional CODE PRACTICE OSCILLATOR, and includes a programmed learning text and two audio cassettes. (The Oscillator costs an additional $ 9.95 unless purchased with the course.)

*ADVANCED DIGITAL TECHNIQUES COURSE, including text, records, and parts $ 49.95.
requires the Digital Design Experiment/Trainer ($ 69.96).
(Both the Oscillator and Digital Design Experiment/Trainers may also be ordered factory assembled if desired.)

*Courses 1, 2, 3, and 4 of the electronics program are PREREQUISITE to the Advanced Digital Techniques Course.

34. Another way to encourage interest in science courses which may not be available in your school is to provide programmed instructional materials. A number of these are available in various subjects. (Publisher addresses are given in Appendix Q, pp. 100+.)

Electronics

ELECTRONICS SELF-TAUGHT WITH EXPERIMENTS AND PROJECTS, by James Ashe. $5.95. TAB Books.

ELECTRONIC CONCEPTS: A SELF-INSTRUCTIONAL PROGRAMMED MANUAL, by Vester Robinson. $6.95. Reston Publishing Company, Inc. (Order from Prentice-Hall.)

(continued)

Radio

COURSE IN RADIO FUNDAMENTALS. $4.00. American Radio Relay League, Inc.

UNDERSTANDING AMATEUR RADIO. $4.00. American Radio Relay League, Inc.

AMATEUR RADIO NOVICE-CLASS LICENSE STUDY GUIDE, Rev. Ed. by J. Kyle and Ken Sessions. $5.95. TAB Books.

AMATEUR RADIO GENERAL-CLASS LICENSE STUDY GUIDE, Rev. by J. Kyle and Ken Sessions. $7.95. TAB Books.

Biology

STUDENT STUDY GUIDE TO THE BIOLOGICAL SCIENCES, 3rd Ed. Philip Sparks and Richard Nord. $6.95. Instructor's guide $3.00. Burgess.

Physics

VECTORS: A PROGRAMMED TEXT FOR INTRODUCTORY PHYSICS. Peter Feibelman. $7.95. Prentice-Hall.

Chemistry

PROGRAMMED INTRODUCTION TO GENERAL AND PHYSICAL CHEMISTRY. Derrick E. Hoare. $5.95. Wiley.

NOTE: Even more advanced programmed materials are available for those highly gifted students with special interests who might wish to become involved in these studies for enrichment. See Subject Guide to Books in Print in high school or public libraries for other subject areas.

Biochemistry

AN INTRODUCTION TO BIOCHEMISTRY. A.J. McMillan. Pergamon.

Genetics

INTRODUCTION TO GENETICS: A PROGRAM FOR SELF-INSTRUCTION. Edward J. Kormondy. $6.50 plus 30¢ for instructor's manual. McGraw-Hill.

PROGRAMMED APPROACH TO HUMAN GENETICS. Allen Vegotsky and Cynthia A. White. $4.25. Wiley.

MATHEMATICS

35. Audio-tutorial kits are available from Encyclopedia Britannia Educacational Corporation (address given in Number 27) for Measurement Skills ($58.75) and Telling Time ($89.00). (See Appendix T, page 107.)

A bilingual edition (Spanish/English)is also available.

36. FAST PACE AND VERTICAL ENRICHMENT (advancing to higher level courses as rapidly as the student is ready) ARE STRONGLY RECOMMENDED FOR THOSE STUDENTS GIFTED IN MATHEMATICS. For example, third-graders who have mastered the skills stated for that grade should be permitted to proceed immediately to the next higher level(s). Arrangements can be made with the teacher of the appropriate grade for the third-grader to join his/her class for mathematics. Or the materials for that grade could be borrowed from the teacher with the student working on an independent study, contract basis in his/her own classroom.

Many junior/senior high school students can complete a year's course in one-half a semester or less; thus by the time they finish high school they have already completed Calculus and enter college with advanced placement credit. (If some courses are not available in smaller schools and/or no one on the teaching staff is qualified to teach those courses, they may be taken by correspondence from the University of Nebraska - High School Counselor for Correspondence Study, Nebraska Hall 511, University of Nebraska Extension Division, Lincoln, Nebraska 68508). Students receive credit by taking Advanced Placement Examinations in May.

Two or more students could work together, helping each other as desired except on tests, of course. Lessons are sent back to the university

for grading, as are all tests.

Another possibility is to borrow regular subject matter textbooks and Answer Key(s) from another school or encourage parents to purchase them and let interested students gifted in math work on the text(s) independently, checking their own work. If no one on the faculty is available to help them in case they have difficulty with some concept or skill, a member of the community who is expert in mathematics may be willing to meet with the student(s) and explain what is not understood.

Another approach to vertical enrichment is the use of programmed textbooks. In upper level math courses, linear programming is not usually as dull and repetitious as indicated in Module 2; however, if branching programs are available, these are preferable.

Credit for each course taken should be added to the student's public school record. Such credit can be earned by taking the College Entrance Examinations in May of any given year.

Algebra

FUNDAMENTALS OF ELEMENTARY ALGEBRA: A PROGRAM FOR SELF-INSTRUCTION. $7.50. McGraw-Hill.

PROGRAMMED COURSE IN BASIC ALGEBRA. William C. Beck and James R. Trier. $9.95. Addison-Wesley.

FUNDAMENTALS OF INTERMEDIATE ALGEBRA: A PROGRAM FOR SELF-INSTRUCTION. $7.50. McGraw-Hill.

INTRODUCTION TO BOOLEAN ALGEBRA AND LOGIC DESIGN: A PROGRAM FOR SELF-INSTRUCTION. G. Hoernes and M. Heilweil. $6.95 plus 75¢ instructor's manual. McGraw-Hill.

(continued)

Trigonometry

TRIGONOMETRY SELF-TAUGHT. Peter H. Selby. $2.95. McGraw-Hill.

Other Mathematics Courses

PROGRAMMED STUDY OF NUMBER SYSTEMS. Ruric E. Wheeler and Ed. R. Wheeler. $4.95. Brooks-Cole.

MATRICES AND LINEAR SYSTEMS: A PROGRAMMED INTRODUCTION. Gaylord M. Merriman and Andrew Sterrett. $6.25. W.A. Benjamin.

PROGRAMMED GUIDE TO CALCULUS AND ANALYTIC GEOMETRY. Earl W. Swokowski and Roy A. Dobyns. $4.95. Prindle.

PROGRAMMED STUDY GUIDE FOR INTRODUCTION TO PROBABILITY AND STATISTICS, 4TH Ed. Robert Beaver and William Mendenhall. $5.95. Duxbury Pr.

PROBABILITY: A PROGRAMED WORKBOOK. $5.25. Entelek Incorporated.

A MATHEMATICAL INTRODUCTION TO LOGIC. Herbert B. Enderton. $14.95. Academy Press.

(Publishers' addresses are given in Appendix Q, pp. 100+.)

GT # 5

PROCESS TRAINING

Critical Thinking

1. Use the Watson-Glaser Critical Thinking Appraisal Test (in the kit) with students whose ability levels are Grade 9 or higher. These may be students in upper elementary grades. Notice areas of strength and weakness and plan ways to help students improve their thinking skills.
2. Review the S.O.I. (Structure of Intellect) workbooks (in the kit):

   CONVERGENT PRODUCTION

   EVALUATION - Advanced

   These have exercises for different content areas, different levels. Select activities for particular purposes, and try them with your gifted/talented students.

   Notice strengths and weaknesses in specific thinking skills. Provide additional workbook practice to strengthen those skills that are in need of improvement. Let students with strengths in various areas work with students who have weaknesses in the areas.
3. Use the exercises from CRITICAL THINKING, Book 1 (in the kit) with gifted/talented students. Encourage them to expand upon the exercises, developing some of their own to challenge others.
4. PROPOSITIONAL LOGIC (in the kit) is an introduction to understanding and using logic. Try it with your gifted/talented students.
5. PREDICATE LOGIC is another kind of introduction to learning how to think logically. It is a sequel to PROPOSITIONAL LOGIC (Number 4 above). Encourage students to try this book.

6. With one or more colleagues learn how to play the game, IN-QUEST - in the kit. This game teaches or reinforces the processes of scientific inquiry. Different kinds of errors that can occur are involved: in reporting observations (lack of control, irrelevant information, forced interpretation, anthropomorphism, not reproducible and incomplete observations), in measurement (lack of precision, unreliability, biased sample, insufficient sampling, unwarranted interpolation, unwarranted extrapolation, spread of observations not reported),and in interpretation (one effect/one cause, failure to consider unit causes, not warranted, inconsistent, hasty generalization, not productive).- These different kinds of errors plus exercises to determine which of two theories (if either) "explains" certain observations train the mind in critical thinking.

Creative Thinking

7. Review Williams' CLASSROOM IDEAS FOR THINKING AND FEELING (in the kit). Try selected activities with your gifted/talented.
(Successful activities might be xeroxed and cut apart, then filed in a box as Task Cards for those times students need NOT work on subject matter or skills already mastered.)

8. To encourage the writing of poetry, read Chapter 1 in Kenneth Koch's WISHES, LIES, AND DREAMS (in the kit) for ideas and examples.
Some suggestions for poems:

Class Collaborations	I Used to ... but Now ...
I Wish...	I Seem to Be ... but Really I Am ...
Comparisons	Metaphors
Noises	If I Were ...
Lies	Colors

9. Use O'Neill's "color collection", HAILSTONES AND HALIBUT BONES, as an effective stimulator for creative work. Education Service Center, Region XIII, has two films, Part 1 and Part 2 - #10193 and #10194 - which can be ordered. Or borrow the book from the school or public library and read it with the students, showing the illustrations to prime their idea pumps.

10. Use CAN YOU IMAGINE? - in the kit - with students at lower elementary levels.

11. Try appropriate activities from MAKING IT STRANGE (Books 1, 2, 3, and 4) - in the kit. Expand upon what is provided, using the approach, learning by making purposeful associations that are new: a concrete, conscious process. Thinking of ways to make what is strange familiar and of ways to make what is familiar different really starts creative juices flowing.

12. Use Creative Listings for brainstorming, for team competition, as individual task cards, etc., with your gifted/talented students.

(Adapted from material by Robert Stanish, Associate Director for Area Service Center for Educators of Gifted and Talented Youth, McKendree College, Lebanon, Illinois)

CREATIVE LISTINGS

IF... (Encourage elaborations: explanations, examples, details, etc.)
If reincarnation is possible, what would you come back as?
If you could leave one thing for the betterment of mankind, what would it be?
If you could be any person in history, who would you be?
If you were an eraser, what would you erase from the dictionary?
If your house caught on fire and you could save only one material object, what would you save?
If you could choose any famous person for a relative, whom would you choose?

(continued)

If you were writing a book, whom would you write about?
If you were a musical instrument, what would you be?

LISTS (Encourage the use of lists in creative ways: writing stories or poems; drawing, painting, sculpting; pantomime or creative dramatics; creating a dance - individually or in groups.)

Compile a list of

a. Twilight colors
b. Happy things
c. Beautiful things
d. Mysterious things
e. Morning things
f. Squishy things
g. Things that hurt
h. Things that reflect
i. Things that harmonize
j. Things that crumple in your hand
k. Things that sparkle under an evening sky
l. Things that are found in two's
m. Things that you like to touch
n. Things that remind you of people you admire
o. Things that remind you of a cafeteria or department store

Urge students to be imaginative, not to grab the first words that come to mind.

ANALOGIES (These should be comparisons, not just sentence completions.)

a. Sadness is ... (e.g., like a gray sky.)
b. Reading is ... (e.g., a journey to the stars.)
c. Loneliness is...
d. Books are...
e. Science is...
f. Weekends are...
g. Parents are...
h. A pet is...

MORE ANALOGIES

a. What musical instrument would you like to be?
b. What vegetable do you think you are most like? (Or fruit?)
c. What sound best describes you?
d. What color best describes you?
e. What article of clothing do you think you are most like?

GT # 5

MORE IF's (Again encourage elaboration: reasons, examples, etc.)

If you could be a precious stone or gem, which would you select?

If your favorite song turned into a color, what would it be?

If you were the wind, where would you like to blow? What kind of wind would you like to be?

If you wanted to be alone, where would you go?

If you were a wall, how would you like to be decorated?

If you were a plant, which one would you like to be?

If you were a falling star, where would you like to land?

If you could be one age all your life, how old would you be?

If you were a weapon, what would you be?

If you could be any object in the world, what would you be?

AND A FEW WHAT's

a. What is the most important responsibility a person has to him/herself?

b. What is the main responsibility of parents to their children?

c. What is the most puzzling question to you?

d. What is the most important thing you have learned from experience?

e. What one person has had the greatest influence in your life?

f. What person, living or de[illegible] do you most admire?

g. What annoys you most in people?

h. What <u>one</u> thing would you like to be able to do in life?

i. When you think of home, what comes first to your mind?

j. What 3 things would you place in a time capsule to be opened in the year 2080?

l. What do you consider to be the most significant thing that has ever happened to you?

m. What is the "ideal" career? Hobby? Vacation?

13. Use picture books without narration and/or films without narration to stimulate writing activity.

The following films (non-narrated) are available from the Education Service Center, Region XIII: (458-9131)

Dream of Wild Horses	#11105	9 min.
Rainshower	#20321	15 min.
Sky	#11475	10 min.
Synchromy	#11348	8 min.

(NOTE: Some students may find this imaginative animated film disturbing. Color, shape, and movement combine to suggest musical rhythms and interaction of instruments. Fascinating and unique but somewhat hard on eyes and nerves. PREVIEW FIRST.)

The Puffed-up Dragon	#10369	10 min.	(animated)
The Thieving Magpie	#11288	10 min.	(animated)

14. Find out how many artistically talented students in your gifted/talented group know any talented people in the community. ("Talent" here refers to music, dance, writing, acting, as well as the visual arts.)

Discuss with these students how they can benefit from associating with community resource people.

Together, draft a letter to musicians, actors, graphic artists, photographers, craftsmen, journalists, and other creative individuals in the area. Try to establish a working relationship between these artists and your students.

15. Invite the high school art teacher or a professional artist to work with all of your gifted/talented students who have no known talent in art, demonstrating basic skills and techniques and guiding with individual words of encouragement as students practice what they have learned. (The National Assessment of Education Progress, a division of the Education Commission of the States, reported in April, 1977, that a study of 27,500 students in the age groups 9-13 and 13-17 indicated that the skills and standards of art can be taught and measured, but that most artistic progress occurs during the early years.)

GT # 5

INVESTIGATION

NOTE: Before students become involved in this stage, they should have had systematic instruction in the use of the many different kinds of reference sources available, including non-print media, instruction in interviewing skills, and instruction in the inquiry process.

1. Plan and conduct a seminar. (A seminar is a group of students engaged in advanced study and original research under the guidance of a teacher.)

   NOTE: The article, "A Seminar for Superior Students," (in Appendix U,pp.108+) indicates the kinds of problems which can serve as a basis for independent study and the specific strategies used to involve the participants. A seminar need not consume the amount of time the author of the article devoted to it. It need not even be held during the school day. Interested students will come before or after school or even on Saturdays when opportunities for challenge and meaningful learning are offered.

   Possible topics for inquiry are listed below.

SCIENCE

Ecology: What Are We Doing to Our Water Supply?

(Involves individualized reading, puzzles, games, photography and science equipment, contacts with various civic organizations and manufacturers to discover ways to reduce water pollution.)

An introductory session could be devoted to tasting water, examining water samples under a microscope and, discussing the purity of local water, followed by discussion of cities with such contaminated drinking water it is hazardous to health (example: New Orleans).

Questions to consider: Where does OUR water come from? (In some places, recycled waste water is used, but few realize this fact and are not only astounded but dismayed to discover the source.)

What safeguards does the community take to insure a safe water supply?

What places are contributing to contamination of the water we receive, such as industries, sewage disposal plants, nuclear energy plants located in

areas that directly or indirectly affect the water received by the community?

NOTE: This topic can lead some students even to investigating the problem of thermal pollution of rivers and streams or the increasing problem of ocean pollution - its extent and depth.

HUMANITIES

What Is Man? (Involves ethics and morality, philosophy, fine arts, major world problems caused by man, theories of history and economics) A three-day symposium at a nearby camp or retreat makes an effective climax and adds another dimension to the learning experience.

SOCIAL STUDIES or LANGUAGE ARTS

ART or MUSIC

Gifted and Talented People - Who Are They? (A study of biographies of established "greats" in history plus personal interviews with local people who can be judged gifted and talented by their successes plus correspondence with nationally recognized individuals after consultation of Current Biography, Reader's Guide to Periodical Literature, and other sources of information about living personalities; also viewing of biographical films, filmstrips, study prints; reading of biographical novels about famous personalities, such as those by Irving Stone...)
This is a good opportunity for students from minority backgrounds to learn about gifted people with the same cultural heritages.

(An alternate to this topic is a "Hall of Fame." See Appendix V, pp. 112.)

OTHER TOPICS

Social problems are fruitful bases for seminars in ALL content areas. The following problems which were read into the Congressional Record in the Senate on October 22, 1955, from an address at Michigan State University are still with us more than twenty years later.

Food requirements and supply

Widening disparities in living standards within different nations

Development strategies for have-not nations

Access to efficient, humane, and cost-effective health services

Maintenance of labor productivity and price-wage stability

Aging, changing population distribution, humane and effective social services

Ethical and social impacts of applications of biomedical engineering (such as genetic alteration)

Economic, political, and social implications of changes in the global climate, in the context of population growth and resource constraints

Land-use planning and management

Environmental regulation

Air and water management and regulation

Oceans policies (for example, dumping of radioactive wastes)

Consumer production safety and performance

Energy supply and utilization

Reduced dependency on foreign imports of basic materials

Weapons assessment and arms control

Nuclear proliferation

NOTE: Many of the topics listed may seem far beyond the reach of students in elementary grades, but each topic can be considered on many levels. At a meeting of the Council for Exception Children, a group of fifth-graders from a Chicago school demonstrated their project regarding land-use planning and management in redesigning their urban neighborhoods.

2. Minicourses or independent study projects developed with student input (Any topic in the seminar group may be used here, and conversely, any topic listed here can become a seminar.) See Appendix N for information about initiating and supervising independent study, pages 113+.

(continued)

GT # 5

POSSIBLE TOPICS

Man's inhumanity to man

Our inner clocks

Biological warfare (or chemical warfare)

Progress in medical science: are we going too far?

Chemotherapy - worth the price?

Underwater exploration

Submarine geology

The right to die

Predestination and free will

Luck: is there such a thing?

Why communes?

Does man make history or does history make the man?

Great civilizations of the past

Paradoxes in life

Symbols and surrealism

Geometric art

Futurism in art

What is jazz?

Humor in music

Electronic music

Electronic toys, puzzles, and games

Hypnotism

ESP and other aspects of parapsychology

GT # 5

War in the 29th century

The individual in society

Science fiction: pointing the way to our future?

The possibilities of the twenty-first century (See TEACHING TOMORROW TODAY for ideas - in the kit)

With gifted/talented students, discuss the nature and purposes of independent study and help develop a plan for the project. Have each student make a contract for the amount and nature of work to be completed by a student-determined deadline. (See Appendix X p.125 for a sample contract, or use the Job Sheet approach as described in Appendix U , pp. 108+).

V. Postassessment

PLEASE DO NOT WRITE IN THE MODULE.

1. Discriminate between activities which are merely busywork and those which provide meaningful learning and are enriching.

2. List at least 10 different kinds of enrichment activities which are stimulating and rewarding for the gifted/talented.

3. List the titles of at least 5 different kinds of commercial materials useful for enrichment. Indicate the nature of the materials as well as the titles.

4. Describe at least 5 specific activities in detail, including their purpose and nature.

5. List at least 3 special opportunities of different kinds available to gifted/talented students.

6. List at least 5 specific community resources in your area by name, including individuals, and show how they can be involved in enrichment activities.

Turn to the next pages and compare your responses.

GT # 5

POSTASSESSMENT EVALUATION

1. See p. 15, Number 1 (definition of term), p. 17 a-g (examples of busywork).
2. See pp. 16, 17, Number 2.
3. See p. 15 and pp. 55-56.
4. See pp. 21-52, Activities.
5. See pp. 17, 18, Number 4.
6. See p.15, Number 5, for different TYPES. Compare your responses with others in your area working with this module, or discuss your responses with a colleague or principal or other supervisor with whom you feel comfortable who may know other resources in the community.

Review the objectives listed on page 1 and rate yourself on a 1 to 5 (high) scale according to your candid opinion of the degree to which you have achieved each objective.

For example: 5 = very well, could not be improved significantly
3 = average, fair demonstration of knowledge and understanding
1 = poor, need much improvement

If you score 3 or lower on any objective, recycle through the appropriate activities; then try the necessary parts of the Postassessment again.

Resources

(Prices as of early spring, 1977 - subject to change.)

Activity Cards

IMAGIN-ACTION, by Bob Eberle
D.O.K. Publishers, 71 Radcliffe Rd., Buffalo, N.Y. 14214
(LC 924 - $2.50)

Books

CLASSROOM IDEAS FOR THINKING AND FEELING, by Frank Williams.
D.O.K. Publishers (See above.) CS -215 - $7.50.

CLIMATE AND THE AFFAIRS OF MEN, by Nels Winkless III and Iben Browning. Harper Magazine Press, 2 Park Ave., New York 10016 $7.95.

CONVERGENT PRODUCTION Workbook, by Mary Meeker and Valerie Maxwell. S.O.I. Institute, 214 Main St., El Segundo, CA 90245 $7.95.

DIVERGENT PRODUCTION Workbook, by Mary Meeker.
S.O.I. Institute (See above.) $7.95.

ENRICHMENT TRIAD, THE: A Guide for Developing Defensible Programs for the Gifted and Talented. Joseph Renzulli. Creative Learning Press, 530 Silas Deane Highway, Wethersfield, CT 06109. $7.95.

EVALUATION - Advanced Workbook, by Mary Meeker.
S.O.I. Institute (See above.) $7.95.

CRITICAL THINKING, by Anita Harnadek.
Midwest Publications, P.O. Box 129, Troy, MI 48099. $7.95.
CRITICAL THINKING Teacher's Manual, by Anita Harnadek.
Midwest Publications (See above.) $3.00.

GRAPH GALLERY, by Pat Boyle.
Creative Publications, 3977 E. Bayshore Rd., P.O. Box 10328, Palo Alto, CA 94303. $3.50.

HAB THEORY, THE, by Allen W. Eckert.
The Popular Library, 600 Third Ave., New York 10011. $2.50.

HYDROPONIC GARDENING. Earth Products Company, P.O. Box 4360, Pasadena, CA 91106. $4.95.

Resources (continued)

IMPROVISATION FOR THE THEATER, by Viola Spolin.
Northwestern University Press, 1735 Benson Ave., Evanston, IL 60201.
$7.50.

LINE DESIGNS, by Dale Seymour, Linda Silvey, and Joyce Snider.
Creative Publications (See page 55.) $2.95.

MAKING IT STRANGE, by Synectics, Inc. Books 1, 2, and 4.
Harper & Row, Publishers, Inc., 10 E. 53rd St., New York 10022.
$1.60 per book; teacher's edition $3.66.

PREDICATE LOGIC, by Howard Pospesel.
Prentice-Hall, Inc., Englewood Cliffs, NJ 07632. $6.95.

PROPOSITIONAL LOGIC, by Howard Pospesel.
Prentice-Hall, Inc. (See above.) $5.00.

SOLAR SCIENCE PROJECTS, by D.S. Halacy, Jr. Scholastic Book Services, 904 Sylvan Ave., Englewood Cliffs, N.J. 07632.
#1404. 85¢.

STAGE: A Handbook of Classroom Ideas to Motivate the Teaching of Elementary Dramatics, by Natalie Bovee Hutson.
Educational Service, Inc., P.O. Box 219, Stevensville, MI 49127. $5.25.

TANGRAMATH, by Dale Seymour.
Creative Publications (See page 55.) $4.50.

TEACHING HUMAN BEINGS: 101 Subversive Activities for the Classroom, by Jeffrey Schrank. Beacon Press, Inc., $3.45.

WISHES, LIES AND DREAMS, by Kenneth Koch.
Vantage Books/Chelsea House Publishers, Division of Random House, Inc., 201 E. 50th St., New York 10022. $2.45.

Film

OUR ART CLASS MAKES A FILM. Film Fair Communications, 10900 Ventura Blvd., P.O. Box 1728, Studio City, CA 91604.
$190.

Games

IN-QUEST, by Robert W. Allen, Leo E. Klopfer, and R. Lawrence Liss. $9.00.

Resources (continued)

(Games)

ON-WORDS, by Layman E. Allen and others. $10.00

TRI-NIM, by Bruce and Hervey Hicks. $5.75.

WFF 'N PROOF: The Game of Modern Logic, by Layman E. Allen. $13.00.

Wff 'n Proof, 1490-BB, South Boulevard, Ann Arbor, MI 48104 (for all games listed above).

Posters

PUZZLE POSTERS, Set A.
Creative Publications. (See page 55.) $6.75 (set of 5).

Simulations

COPE, by Jerry K. Ward. $12.00.

DISUNIA, by David Young and Paul Dekock. $12.00.
Interact Company, P.O. Box 262, Lakeside, CA 92040 (for both titles).

RAFA RAFA, by R. Garry Shirts.
Simile II, P.O. Box 910, Del Mar, CA 92014. $15.00.

Test

Watson-Glaser Critical Thinking Appraisal, by Goodwin Watson and Edward M. Glaser. Harcourt Brace Jovanovich, Inc., 757 Third Ave., New York, NY 10017. $14.25 Specimen Set, Forms Ym and Zm.